

REMARKS

THE AMENDMENTS

Claim 3 has been amended to more particularly point out and distinctly claim the subject matter applicants regard as the invention. The claim now clearly recites that the aliphatic hydrocarbon in the mixture of, at least, two structurally non-identical saturated aliphatic hydrocarbons having a linear or branched chain contains from 5 to 10 carbon atoms.

This amendment is supported by the original claims, particularly claim 3 itself. Applicants respectfully submit that this amendment adds no new matter to the application and earnestly solicit entry thereof.

Claims 4 and 5 have been amended to more closely align the language of the claims with that of claim 1, from which both claims depend. Applicants respectfully submit that these amendments are supported by the claims themselves and throughout the specification. Applicants respectfully solicit entry of the amendments, which add no new matter to the application.

Claims 8, 10, and 14 have been amended to delete surplusage and to depend from claim 1, rather than a subpart of that claim. Applicants respectfully submit that these amendments are supported by the claims themselves and throughout the specification. Applicants respectfully solicit entry of the amendments, which add no new matter to the application.

Claim 8 also has been amended to correct an obvious grammatical error by cancelling “structural” and inserting “structurally” in lieu thereof. Applicants respectfully submit that this amendment is supported by the claim itself and throughout the specification. Applicants respectfully solicit entry of the amendment, which adds no new matter to the application.

THE OFFICE ACTION

Claims 1-15 were pending and examined.

Claim 3 stands rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failure to particularly point out and distinctly claim the subject matter applicants regard as the invention. The claim has been amended in accordance with the suggestion in the Office Action. Applicants thus traverse this rejection.

Claims 1-6 and 15 stand rejected under 35 U.S.C. § 102 (b) as anticipated by Hsu, United States Patent Number 6,086,782. In particular, the Office Action asserts that the following disclosures are made in Hsu:

1. a combination of at least one terpene, including menthane, and another terpene, 1,1-dimethylcyclohexane. These compounds are said in the office action to be cycloalkane-alkyl groups with alkyl moieties having between 1-10 carbons that meet claim 1a;
2. acyclic terpenes such as myrcene, said to be an aliphatic hydrocarbon; and
3. a combination of both an acyclic terpene such as myrcene and a cyclic terpene such as menthane are said to meet the limitations of claim 1c.

The office action also asserts that Hsu discloses that the compositions are liquids at -175°F, citing column 10, lines 21-24, with 'many' compositions expected to be fluid at temperatures lower than -175°F, citing column 10, lines 26-29. The other limitations of claim 1 are said to be inherent.

The combination of menthane and 1,1-dimethylcyclohexane are said to meet claim 2.

The combination of myrcene, identified as a C₁₀ aliphatic hydrocarbon but listed in Table 2 of Hsu as a terpene, and menthane, is identified as meeting claim 3.

The physical properties of viscosity and vapor pressure of claims 4 and 5 are said to be inherent, and the office action appears to assert that menthane and 1,1-dimethylcyclohexane together and menthane and myrcene together inherently have the properties recited in the pending claims.

The combination of menthane and 1,1-dimethylcyclohexane are said to meet claim 6.

The freezing (cloud) point of claim 15 and other properties and characteristics recited in claim 1 again are said to be inherent.

Claims 7-14 stand rejected under 35 U.S.C. § 103(a) as obvious over Hsu, and further in view of Praller, WO 01/92436.

The rejection of claim 7 repeats the recitations about claim 1 and the allegedly inherent properties and characteristics recited therein, and further identifies, at Hsu column 4, lines 8-10, a mixture of about 50 volume percent cumene in d-limonene. Cumene is identified as an alkylbenzene, whereas d-limonene is listed in Hsu's Table 2 as a cyclic terpene. Pure limonene, which is characterized as 95.6 weight percent limonene with 2.7 weight percent myrcene, also is identified.

The office action admits that claim 7 is different from Hsu. The office action admits that Hsu does not disclose the following:

1. the weight ratio ranges of claims 8 and 10-14;
2. the cycloalkane-alkyl components of methylcyclohexane and ethylcyclohexane; and
3. the limitations of aliphatic alkane components of the compositions set forth in claims 7 and 14.

The office action construes the disclosure in Hsu of a composition “consisting of a mixture of d-limonene and cumene, wherein the composition consists of about 50% by volume of cumene in d-limonene” (col. 4, lines 8-10) as a teaching of a weight ratio between two components of any heat transfer fluid, including combinations of cycloalkane-alkyl components, aliphatic hydrocarbon components, or a mixture of cycloalkane-alkyl components and aliphatic hydrocarbon components, “given that the components in combination have comparable size.” The office action asserts that Hsu’s disclosure is a disclosure of saturated molecules of similar size and volume, there being only 1 carbon difference between them. The office action further asserts that “[o]ne skilled in the art would find obvious to consider 1:1 weight ratios of two-component heat transfer fluids and therefore, find obvious the weight ratio limitations of instant claims 9, 10-14.”

The office action admits that 1,1-dimethylcyclohexane disclosed in Hsu does not meet claims 9 and 14, but asserts that the difference, one methyl group in the “1-” position, or “substitution of the dimethyl group with an ethyl group,” would have been obvious. The office action cites Manual of Patent Examining Procedure § 2144.09 in support of this position, and asserts that the structural differences between the claimed compounds and the disclosed compound “would not significantly alter the physical/chemical properties of 1,1-dimethylcyclohexane in its function in heat-transfer fluids.”

The office action also relies on Praller for a disclosure of 2- and 3-methyl pentane, asserting that Praller is analogous art as “drawn to a heat transfer fluid for low temperature applications comprising cycloalkane-alkyl and aliphatic hydrocarbon components.”

The office action then asserts that Hsu’s at least one terpene, “which is further disclosed” as including menthane, 1,1-dimethylcyclohexane and aliphatic hydrocarbon terpenes such as

myrcene, combined with the methyl pentanes of Praller, “encompasses the instant claims 7 and 14 in their entirety [sic].”

The office action asserts that Hsu establishes the motivation to combine by disclosing that, although aliphatic/noncyclic hydrocarbons having 10 carbon atoms are suitable, “smaller hydrocarbon chains of similar fundamental chemical structures may be used (col. 4, lines 47-51).” Thus, the office action asserts, Praller’s pentanes become suitable aliphatic hydrocarbons, and it would have been obvious to consider 2- and 3-methyl pentane as an aliphatic hydrocarbon component either in combination with each other, or in combination with cycloalkane-alkyl compounds.

The office action also found previous argument unpersuasive. In particular, the office action asserts that “consisting essentially of” means that the claim is “half-open” and “does not necessarily preclude the inclusion of other components.” This assertion is made to rebut the position taken in the first response that Hsu requires alkylbenzene in the composition, and this compound is excluded by the ‘consisting essentially of’ transitional phrase. The office action also asserts that Praller’s disclosure of methylecyclopentane in heat transfer mixtures affords the opportunity to rely upon the disclosure “in combined reference.”

THE CITED DOCUMENTS IN RELATION TO THE CLAIMS

Hsu

Hsu discloses a heat transfer fluid composition comprising a terpene component having at least one terpene and an alkylbenzene component having at least one alkylbenzene, in quantities sufficient to be liquid at temperatures below 0° F to about -175°F. “Terpenes” includes hydrogenated derivatives and acyclic terpenes; a number of suitable terpene compounds are

identified in Table 2. Specific examples are limited, and -175°F is the lowest temperature measurable in Hsu's system. Thus, some temperatures at which the mixture is still liquid are described as "at least -175°F." This temperature gives no idea of what the freezing point, and so the service temperature, actually is for that combination.

None of the examples is directed to any mixture other than a mixture of a terpene with an alkylbenzene. No example is directed to two terpenes alone or two alkylbenzenes alone. Indeed two terpenes or two alkylbenzenes alone would not meet Hsu's description. The only examples are cumene and limonene and diethylbenzene and terpinolene.

Regarding Claims 1-6 and 15

Clause 'a' of claim 1

Hsu does not disclose a heat transfer fluid comprising menthane and 1,1-dimethylcyclohexane together. Rather, these compounds are merely two listings in a table of approximately 100 terpenes. These compounds are not used in any example, and certainly there is no example of this combination, nor can there be. Hsu does not disclose the menthane/1,1-dimethylcyclohexane combination because Hsu requires **both** a terpene and an alkylbenzene. Both menthane and 1,1-dimethylcyclohexane are terpenes; both compounds are so identified in Table 2 of Hsu. Neither menthane nor 1,1-dimethylcyclohexane is an alkylbenzene, which is defined at column 9, lines 41-42, as "a benzene alkylated with a hydrocarbon."

Hsu clearly requires an alkylbenzene, for, as described at column 7, lines 26-29, "[i]t has been surprisingly found that alkylbenzenes can be mixed with terpenes to obtain heat transfer fluid compositions that exhibit characteristics which are superior to either component alone." Thus, Hsu teaches that a fluid comprising menthane and 1,1-dimethylcyclohexane would not be

satisfactory. Hsu also teaches unambiguously that an alkylbenzene materially affects basic and novel characteristics of Hsu's composition.

Clause 'b' of claim 1

Hsu appears not to identify any saturated aliphatic linear or branched saturated hydrocarbons having 5 to 15 carbon atoms.

Clause 'c' of claim 1

Hsu discloses myrcene, and dihydromyrcene, for that matter. However, neither is saturated, as is required for claim 1, part c.

Remaining elements of claim 1

Hsu is silent with regard to cloud point, vapor pressure at 175°C, and viscosity measured at a temperature 10°C higher than the cloud point. Viscosity is the only property mentioned in Hsu, but, as cloud point is not mentioned, the viscosity at a temperature related to the cloud point cannot be disclosed.

Indeed, Hsu discloses that viscosity is related to the composition of the fluid, as Hsu discloses that limonene gels at about -140°F. A gel comprising a single compound may be thought of as a fluid having a very high viscosity. Hsu teaches that limonene might be acceptable in a blend taught by Hsu, but Hsu teaches nothing about the three properties and characteristics set forth in claim 1.

Claim 3

Hsu's disclosure of myrcene is not relevant to claim 3. Hsu discloses no saturated aliphatic hydrocarbons that meet the limitation of claim 3.

Claims 4, 5, and 15

Again, Hsu discloses nothing about quantification of viscosity, or about vapor pressure.

Claim 6

Hsu's disclosure of two of approximately 100 compounds in a table does not disclose a combination of these two compounds, nor does it disclose a heat transfer fluid suitable to Hsu. A combination of two terpenes is not what Hsu discloses. Rather, Hsu requires both a terpene and an alkylbenzene. As menthane and 1,1-dimethylcyclohexane both are terpenes, there is no alkylbenzene in the proposed combination, and so Hsu cannot disclose or suggest the proposed combination.

Another combination proposed in the office action is the combination of myrcene and menthane. Again, however, both of these compounds are terpenes, and Hsu cannot disclose or suggest the combination of two terpenes, without an alkylbenzene, as a heat transfer fluid. Hsu teaches away from both proposed combinations because Hsu requires an alkylbenzene in combination with a terpene.

Claims 7-14

Hsu's disclosure teaches a mixture of 50 volume percent cumene in limonene, but neither is a saturated compound. Similarly, Hsu discloses that commercially-available limonene often comprises 95.6 weight percent limonene and 2.7 weight percent myrcene. However, neither of these compounds is saturated.

In addition to the argument set forth above identifying assertions ascribed to Hsu but not disclosed or suggested therein, Hsu also does not disclose any of the following:

1. the weight ratio limitations of claims 8 and 10-14;
2. methylcyclohexane or ethylcyclohexane; and

3. the aliphatic alkane compounds of claims 7 and 14.

Hsu teaches nothing about selecting compounds of similar size.

Hsu teaches nothing about ‘smaller hydrocarbon chains of similar fundamental chemical structures,’ as the office action asserts. At the cited point (column 4, lines 47-51), Hsu describes various structures that define ‘terpene’ as used in Hsu. The paragraph from which the office action selectively cites notes that terpenes traditionally were known as compounds having the formula $C_{10}H_{16}$, but, at line 47-51, “the term ‘terpenes’ may now be understood to include not only the numerous $C_{10}H_{16}$ hydrocarbons, but also their hydrogenated derivatives and other hydrocarbons possessing similar fundamental chemical structures.” It is this definition that allows Hsu to identify menthane and 1,1-dimethylcyclohexane as terpenes. Thus, the assertion in the office action distorts Hsu’s disclosure, which says nothing about smaller hydrocarbon chains. Hsu’s disclosure is that a combination of alkylbenzene and terpene is required to make an acceptable heat transfer fluid.

Praller

Praller is not in the English language. However, applicants’ representative is informed that Praller recites that methyl pentane or analogs thereof are better heat transfer fluids than the composition methylcyclopentane. Further, applicants’ representative is informed that Praller does not disclose or suggest mixtures of two or more compounds.

THE INVENTION

The invention is directed to a heat transfer fluid for use over a broad range of temperatures. The fluid consists essentially of a component selected from the group consisting

of (a) a mixture of at least two structurally non-identical saturated cycloalkane-alkyl or -polyalkyl components, (b) a mixture of, at least, two structurally non-identical saturated aliphatic hydrocarbons having a linear or branched chain with from 5 to 15 carbon atoms; and (c) a mixture of, at least, a saturated cycloalkane-alkyl or -polyalkyl and a saturated aliphatic hydrocarbon having particular carbon numbers.

The cycloalkane moiety of the first mixture contains from 5 to 8 carbon atoms, the alkyl moiety contains from 1 to 6 carbon atoms with the proviso that the total number of carbon atoms in the alkyl moiety(ies) on the cycloalkane-alkyl and cycloalkane-polyalkyl compounds together is in the range of from 1 to 10.

The cycloalkane moiety contains from 5 to 8 carbon atoms, the alkyl moiety contains from 1 to 6 carbon atoms with the proviso that the total number of carbon atoms in the alkyl moiety(ies) on the cycloalkane-alkyl and cycloalkane-polyalkyl compounds together is in the range of from 1 to 10, and a saturated aliphatic hydrocarbon having a linear or branched chain with from 5 to 15 carbon atoms.

The composition has: a cloud point below $-100^{\circ}\text{C}.$, a vapor pressure, at $+175^{\circ}\text{C}.$, below 1300 kPa; and a viscosity, measured at the cloud point temperature $+10^{\circ}\text{C}.$, below 400 cP.

The dependent claims are directed to specific features of the invention.

THE INVENTION IN VIEW OF THE CITED DOCUMENTS

Formalities

Applicants have amended claim 3 to more particularly point out and distinctly claim the subject matter applicants regard as the invention.

Therefore, applicants respectfully traverse the formal rejection of claim 3 under 35

U.S.C. § 112, second paragraph.

On the Merits

Applicants respectfully traverse the pending rejections. Hsu does not disclose the invention as claimed. Hsu neither anticipates claims 1-6 and 15 nor makes obvious, alone or in combination with Praller, claims 7-14. Claims 2-15 are dependent, directly or indirectly, from claim 1, and so are allowable at least for the reasons claim 1 is allowable.

With regard to the proposed combination, any discussion of one cited document is to be read in combination with other cited documents. Just as when individual documents are discussed in the office action as part of a combination, so, too, are the individual documents discussed herein as part of a combination.

Over-arching discussion for all claims

All claims are directed to heat transfer fluids that (1) consist essentially of (2) saturated hydrocarbons and (3) have properties and characteristics that are not inherently disclosed in other heat transfer fluid compositions.

(1) “Consisting essentially of”

Applicants respectfully submit that the assertion in the office action that the transitional phrase ‘consisting essentially of’ is ‘half-open and does not necessarily preclude the inclusion of other components’ is irrelevant here. Applicants respectfully submit that ‘consisting essentially of’ is not “half-open,” which is an ambiguous phrase that is meaningless in patent prosecution practice.

Rather, it is well-settled that the phrase ‘consisting essentially of’ means that ingredients that materially affect basic and novel characteristics of the claimed composition are excluded. *Atlas Powder Co. v. E. I. du Pont de Nemours & Co.*, 750 F.2d 1569 (Fed. Cir. 1984).

Therefore, applicants respectfully submit that because Hsu discloses that an alkylbenzene is *required* in Hsu's composition, because the composition gels if an alkylbenzene is not there, alkylbenzene is an ingredient that materially affects the basic and novel characteristics of the claimed composition. Therefore, alkylbenzenes are excluded as a component in concentration sufficient to materially affect the basic and novel characteristics of the heat transfer fluid. Indeed, even if Hsu suggested that menthane and 1,1-dimethylcyclohexane were to be used together, which applicants do not admit is suggested in Hsu, Hsu *further requires* that an alkylbenzene be added, because the terpene component alone is insufficient.

Applicants respectfully submit therefore that the pending claims are essentially limited to saturated compounds. Therefore, the disclosure in Hsu of myrcene, cumene, limonene, or any other compound that is not saturated, is not relevant.

Applicants respectfully traverse rejection of all pending claims.

(2) Saturated Compounds

The office action asserts that the disclosure of two compounds, menthane and 1,1-dimethylcyclohexane, in a table in which about 100 terpenes are identified, anticipates claims of the pending application. Further, the combination of Hsu with Praller is said to suggest the claimed invention.

Applicants respectfully traverse these rejections.

Applicants respectfully submit that the premise upon which all the rejections are based is not well-founded. The office action identifies two terpene compounds from a table of about 100 terpene compounds and asserts that Hsu discloses the combination of these two terpenes.

Each of menthane and 1,1-dimethylcyclohexane is identified in Hsu as a terpene. However, as set forth throughout Hsu's disclosure, Hsu is directed to a combination of a terpene with an alkylbenzene, as set forth in the following selection of citations to Hsu:

Heat transfer fluid compositions comprising (a) a terpene component, comprising at least one terpene; and (b) an alkylbenzene component, comprising at least one alkylbenzene. (Abstract)

It has been surprisingly found that heat transfer fluid compositions comprising (a) a terpene component, comprising at least one terpene; and (b) an alkylbenzene component, comprising at least one alkylbenzene; are suitable for use as heat exchange liquids for low temperature applications. (Column 2, lines 52-56)

It is another object of the invention to provide heat transfer fluid compositions comprising (a) a terpene component, comprising at least one terpene; and (b) an alkylbenzene component, comprising at least one alkylbenzene. (Column 3, lines 1-5)

It has been surprisingly found that alkylbenzenes can be mixed with terpenes to obtain heat transfer fluid compositions that exhibit characteristics which are superior to either component alone. ... It has been discovered that mixtures of terpene and alkylbenzene produce distinctly different physical properties as compared to either terpenes or alkylbenzene alone. Particularly, it has been discovered that certain heat transfer fluid compositions comprising a terpene component, comprising at least one terpene, and an alkylbenzene component, comprising at least one alkylbenzene, exhibit freezing point temperatures that are lower than either the terpene or the alkylbenzene component alone.

The heat transfer fluid compositions of the invention comprise (a) a terpene component, comprising at least one terpene; and (b) an alkylbenzene component, comprising at least one alkylbenzene. (Column 7, lines 26-29 and 33-46)

Thus, applicants respectfully submit that Hsu's teaching is clear and unambiguous – **both** a terpene **and** an alkylbenzene are required.

Because both menthane and 1,1-dimethylcyclohexane are listed in Hsu's Table 2, both are considered by Hsu to be terpenes. Therefore, a heat transfer fluid that is the combination of menthane and 1,1-dimethylcyclohexane is not disclosed in Hsu explicitly (the combination is not specifically recited) or inferentially (because both are terpenes).

Further, a combination of menthane and 1,1-dimethylcyclohexane cannot be suggested in Hsu. Hsu teaches that an alkylbenzene is required.

However, the claims of this pending application preclude unsaturated materials that materially affect basic and novel characteristics of the claimed invention by the "consisting essentially of" language.

Further, there can be no suggestion to combine Hsu with Praller. Hsu requires alkylbenzene and a terpene. In particular, the office action mentions methyl pentane of Praller.

Applicants respectfully submit that the compounds of Praller are neither terpenes nor alkylbenzenes, so Hsu cannot be successfully combined with Praller. The assertion in the office action of the reason said to support the proposed combination fails on many levels, the most fundamental being that Hsu requires an alkylbenzene, which cannot be present in the proposed combination of two terpenes with the pentanes of Praller. Applicants respectfully submit that the skilled practitioner would not look to Praller in view of Hsu's requirement that both alkylbenzene and terpene be present in the heat transfer fluid.

Further, the proposed combination, to the extent it can be made, is nonsensical. Applicants respectfully submit that a combination of Hsu with Praller requires a terpene, an alkylbenzene, and a compound of Praller. This tripartite combination is not the claimed

invention (because alkylbenzene is an unsaturated compound), nor does it suggest the claimed invention.

Thus, applicants respectfully traverse the rejection of all claims.

(3) Properties and Characteristics

Applicants respectfully submit that the properties and characteristics of these compounds are not inherently disclosed in Hsu or anywhere else. Information in the specification clearly illustrates that the properties and characteristics of these compounds are related to composition, both by difference in proportion and difference in structure, even by only 1 carbon atom (for example, ethylcyclohexane and methylhexane), and that small differences in either can result in a profound difference in the properties and characteristics of the resultant heat transfer fluids.

The following comparisons, taken from the table in paragraph 22 of the pending patent application publication, are instructive. In the table, property C is vapor pressure at 175°C, in kPa, and D is viscosity in cP at the cloud point temperature + 10°C:

Sample Numbers Compared	Change and Effect Thereof
8 and 17	Change of proportion and from methyl-cyclopentane to ethyl-cyclohexane changes C and D
20 and 21	Small difference in proportion changes C and D in opposite directions
25 and 26	Change from ethyl-cyclohexane to 2-methyl-hexane changes C and D in opposite directions
43 and 46	Change from 2-methyl-hexane to ethyl-cyclohexane changes C and D in opposite directions
17 and 19	Change from ethyl-cyclohexane to 2-methyl-hexane changes C and D in opposite directions
29 and 30	Small difference in proportion changes C and D in opposite directions
35 and 37	Change from 2-methyl-hexane to ethyl-cyclohexane changes C and D in opposite directions
72 and 73	Change from 2-methylpentane to 3-methylpentane changes C and D

These are only exemplary of the changes in properties with changes in composition or proportion.

Specifics for the claims

Claim 1

Applicants respectfully traverse the rejection of claim 1 as anticipated by Hsu. The Office Action identifies a proposed combination of two terpenes, menthane and 1,1-

dimethylcyclohexane, from lists of components in Hsu, as anticipatory of subparagraph (a). Subparagraph (a) is one of the three parts of the Markush Group.

The Office Action does not assert that Hsu meets subparagraph (b), the second component of the Markush Group.

Applicants respectfully submit that subparagraph (c) is not anticipated by Hsu, as asserted in the Office Action.

This rejection is not well-founded. These two terpene compounds are not used together in Hsu, and, more importantly, cannot be used in Hsu as a heat transfer fluid as neither is an alkylbenzene. Rather, this proposed combination was selected with hindsight from the about 100-factorial combinations from Table 2 only in view of the teachings of the pending application. As alkylbenzene, which is required in Hsu, is excluded by the transitional phrase in the pending claims, Hsu cannot anticipate the claims.

The Office Action asserts that two compounds, myrcene and menthane, meet the limitations of subparagraph (c). However, the rejection again suffers on the same points again. Not only does Hsu not disclose the use of these two compounds together, but also, and more importantly, these two compounds together do not form a heat transfer fluid of Hsu containing a terpene and an alkylbenzene. Further, myrcene is not a saturated compound, so Hsu does not disclose subparagraph (c) for this reason as well.

The office action contains no assertion that subpart b is not allowable.

Applicants respectfully submit that the assertion that the properties and characteristics recited in claim 1 are inherent to the composition is not well-founded. Whereas it is true that the properties and characteristics of a composition are related to the ingredients in the composition, this tautological assertion is not relevant to patentability, for reasons too numerous to list here.

In particular, this tautology does not address the point that each composition will have a different set of properties and characteristics, and there is no reason to expect that any, or all, properties and characteristics will fall within the limitation.

Applicants respectfully submit that the important point here is that the properties and characteristics of the compounds claimed herein are not inherently disclosed in Hsu. Indeed, Hsu does not discuss cloud point, vapor pressure, or viscosity at a temperature 10°C above the cloud temperature. Thus, one cannot assert that Hsu's compositions anticipate those of claim 1 without knowing these values. This assertion from the office action does not establish a *prima facie* case for obviousness.

Indeed, applicants respectfully submit that Hsu itself rebuts and traverses this inherency rejection. Hsu discloses that

It has been discovered that mixtures of terpene and alkylbenzene produce distinctly different physical properties as compared to either terpenes or alkylbenzene alone. Particularly, it has been discovered that certain heat transfer fluid compositions comprising a terpene component, comprising at least one terpene, and an alkylbenzene component, comprising at least one alkylbenzene, exhibit freezing point temperatures that are lower than either the terpene or the alkylbenzene component alone. (Column 7, lines 30-42)

Thus, applicants respectfully submit that the properties and characteristics are not disclosed in Hsu, inherently or otherwise, and cannot be said to be inherently disclosed.

Applicants respectfully submit that Hsu does not anticipate, nor does it suggest, claim 1. Therefore, applicants respectfully traverse the rejection of claim 1.

Applicants respectfully submit that, the remaining claims being dependent from claim 1, all claims are allowable over Hsu.

Claims 2-6 and 15

The rejection of claims 2-6 ignores the point that, because Hsu requires an alkylbenzene as a part of the heat transfer fluid, Hsu cannot anticipate the claimed invention. The assertions in the Office Action regarding claims 2-6 do not consider this aspect of Hsu. Further, Hsu does not suggest that any heat transfer fluid can be useful without an alkylbenzene.

The rejection of claims 2 and 6 again relies on selection of two compounds only because they meet the claims herein, without a suggestion to select those two compounds from the approximately 100 illustrative compounds set forth, and in the face of the disclosure in Hsu that a combination of these two compounds would not be a satisfactory heat transfer fluid.

The rejection of claim 3 relies on an unsaturated compound.

The rejection of claims 4, 5, and 15 relies on the meaningless tautological assertion, which does not address patentability.

Applicants respectfully submit that the other assertions relating to these claims are not relevant, as they ignore a requirement of Hsu. Applicants respectfully traverse the rejection of claims 1-6 and 15.

Claims 7-14

Applicants respectfully traverse the rejection of claims 7-14 as obvious. This rejection suffers from the same important infirmity found in the anticipation rejection, specifically, that Hsu requires an alkylbenzene as a component in Hsu's heat transfer fluid. Therefore, applicants respectfully submit that the assertions relating to these claims are not relevant, as they ignore a requirement of Hsu. Further, the Office Action simply ignores limitations of the claims that are distinct from both Hsu and Praller's disclosure.

To the extent the rejection of claims 7-14 relies on Praller, applicants respectfully submit that Praller fails to suggest anything that cures the shortcomings of Hsu, so the proposed combinations fails. The suggestions relating to molecular weight similarities are, simply put, assertions that have no basis in fact or in patent prosecution practice. As set forth above, different compounds have different properties and impart different properties to a mixture with other compound. One need only consider that methanol is poisonous whereas ethanol is not.

Further, applicants respectfully submit that the skilled practitioner would not make the proposed combination. As Praller does not address mixtures, the skilled practitioner would not seek to introduce the compounds of Praller into Hsu. Applicants respectfully submit that the skilled practitioner, seeing Table 2 of Hsu, would not seek to introduce the methyl pentanes and analogs thereof into Hsu. Indeed, Hsu teaches that terpenes and alkylbenzenes in combination are useful, but makes no provision for Praller's compounds, and Praller makes no provision for mixtures of any type.

Still further, applicants respectfully submit that the proposed combination does not yield the claimed invention. The proposed combination requires alkylbenzene as a component in the heat transfer fluid.

Reliance in the office action on the closeness of chemical structure of the claimed compounds that form the heat transfer fluid claimed herein and the fortuitously-selected compounds from Hsu that together do not form a heat transfer fluid in accordance with Hsu's disclosure simply do not support a *prima facie* showing of obviousness.

For at least these and the reasons set forth with regard to claim 1, applicants respectfully traverse the rejections of claims 7-14.

CONCLUSION

Applicants respectfully traverse the rejections. The cited documents neither suggest nor disclose the claimed invention, whether considered alone or in the proposed combination. Indeed, the cited documents themselves teach away from that proposed combination, which can be made only with impermissible hindsight reconstruction based on review of the pending application. Further, the proposed combination would not be made by the skilled practitioner and, even if made, does not result in the claimed invention.

Applicants' representative has set forth argument relating to these points in a number of ways and in a number of contexts to highlight the merits of the now-pending claims. Applicants respectfully submit that these claims are in condition for allowance and earnestly solicit favorable action thereon.

Respectfully submitted,

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